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EXAMINER

XU, LING X

ART UNIT	PAPER NUMBER
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1775

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DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applicati n No.

10/063,917

Applicant(s)

SCHAEPKENS, MARC

Examiner

Ling X. Xu

Art Unit

1775

-- Th MAILING DATE of this communication appears on th cover sh et with th correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) 60-86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-25, drawn to a substrate, classified in class 428, subclass 698.
  - II. Claims 26-59, drawn to a barrier layer, classified in class 428, subclass 698.
  - III. Claims 60-80, drawn to a method of making the substrate, classified in class 427, subclass 569.
  - IV. Claims 81-103, drawn to a method of making another substrate, classified in class 427, subclass 569.

Upon reconsideration, the Examiner will examine Group I and II together and Group III and IV will also be grouped together.

The inventions of Group I + II and Group III+IV are distinct, each from the other because of the following reasons:

Inventions I+II and III+IV are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, such as the typical plasma enhanced chemical vapor deposition (PECVD) process.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Also because these inventions are distinct for the reasons given above and the search required for Group I+II is not required for Group III+IV restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Robert Santandren on 2/21/2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-25. Group II, claims 26-59, will also be examined with Group I as stated above. Affirmation of this election must be made by applicant in replying to this Office action. Claims 60-103 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Objections***

2. Claims 24 and 58 are objected to because of the following informalities:

"terephtalene" should be – terephthalate--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 2, it is unclear if one barrier layer can be disposed on one surface of the substrate, or more than one barrier layers can be disposed on the same surface of the substrate. It is also unclear if the barrier layer can only be disposed on the surface of the substrate, or the barrier layer can also be disposed on another barrier layer. Similar language is also used in claim 37.

In claim 6, it is unclear if the carbide of the metal, the oxide of the metal and the nitride of the metal in lines 2-3 also includes the ceramic material of silica, alumina, zirconia, boron nitride, boron carbide, and boron carbonitride listed in lines 6-8. It is also unclear if the polymer in line 8 also includes the compounds of epoxide, acrylate, acrylonitrile, xylene, styrene listed in lines 9-10. Similar language is also used in claims 8, 42, and 44.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10-13, 17-24, 26, 30-44, 46-47 and 51-58 are rejected under 35 U.S.C. 102(b) as being anticipated by Tahon et al. (US 6,355,125).

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Tahon discloses a substrate comprises one or more functional layers necessary for making an electric or electronic device such as a photovoltaic cell or LED and a thin glass sheet laminated to substrate as barrier layer (Col. 3, lines 30-50).

Tahon also discloses the thin glass sheet may be provided with an additional barrier layer to reduce permeability of gases such as oxygen or water vapor (Col. 6, lines 35-40).

With respect to claims 4-6 and 40-42, Tahon discloses the use of adhesive layer comprising polyethylene (the "polymer" in claim 6) between the barrier layer and the substrate (Col. 7, lines 1-10).

With respect to claims 7-8, 10-11, 43-44, 46-47, Tahon discloses the functional layers can be an electroconductive layer in LCD cell comprising tin oxide, indium oxide or tin doped indium oxide.

Tahon discloses the electroconductive layer comprises the same component as the claimed abrasion resistant layer and the infrared reflecting layer, the same electroconductive layer can also function as an abrasion resistant layer or an infrared reflecting layer.

With respect to claims 12-13, 26, and 37, Tahon discloses the barrier layer comprises inorganic material such as  $\text{SiO}_x$  or  $\text{Ta}_2\text{O}_5$  are known in the art (Col. 6, lines 45-50).

The thickness of the inorganic barrier layer is lower than 2 micron, which is within the range recited in claims 17-18, 30-31 and 51-52.

With respect to claims 23-24 and 57-58, Tahon discloses the substrate may be a metal, foil, paper or a plastic such as polyethylene terephthalate, polyethersulfone, etc.(Col. 6, lines 8-30).

Since Tahon discloses the same barrier layer as claimed, the same barrier layer would also has the same properties such as water vapor transmission rate and the oxygen transmission rate as recited in claims 1, 19-20, 26, 32-33, 37 and 53-54.

It is noted that claims 22, 34-36 and 56 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (MPEP 2113). "[E]ven though product – by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964, 966.

Tahon meets all the limitations of claims 1-8, 10-13, 17-24, 26, 30-44, 46-47 and 51-58.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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<sup>(1)</sup> Claims 1-8, 10-14, 16-23, 26-27, 29-44, 46-48 and 50-57 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al (US 6,198, 217). <sup>(2)</sup> <sup>(4)</sup>

Suzuki discloses an organic EL unit covered with a protective double layer made of an organic barrier layer and an inorganic barrier layer (Abstract).

With respect to claims 4-6 and 40-42, Suzuki discloses the use of adhesive layer comprising polyethylene (the "polymer" in claim 6) between the barrier layer and the substrate (Col. 7, lines 45-60).

With respect to claims 7-8, 10-11, 43-44 and 46-47, Suzuki discloses the EL unit comprises an anode of a conductive material such as indium tin oxide.

Suzuki discloses the electroconductive layer comprises the same component as the claimed abrasion resistant layer and the infrared reflecting layer, the same electroconductive layer can also function as an abrasion resistant layer or an infrared reflecting layer.

With respect to claims 12-14, 16, 26-27, 29, 37, 48 and 50, Suzuki discloses the inorganic barrier layer is made of metal oxide and metal nitride such as  $\text{Si}_3\text{O}_4$  and TiN (Col. 7, lines 15-25). The thickness of the inorganic barrier layer is 0.1-2 micron (Col. 7, lines 25-30), which is within the range recited in claims 17-18, 30-31 and 51-52.

With respect to claims 23 and 57, Suzuki discloses the substrate may be a glass, or polyethylene or polymethyl methacrylate (Col. 7, lines 50-60).

Since Suzuki discloses the same barrier layer as claimed, the same barrier layer would also has the same properties such as water vapor transmission rate and the oxygen transmission rate as recited in claims 1, 19-20, 26, 32-33, 37 and 53-54.



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It is noted that claims 22, 34-36 and 56 are product-by-process claims. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (MPEP 2113). "[E]ven though product – by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964, 966.

Suzuki meets the limitations of claims 1-8, 10-14, 16-23, 26-27, 29-44, 46-48 and 50-57.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 23-25, 45 and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tahon et al. or Suzuki et al. in view of Ikai et al.(US 6,015,951).

As stated above, Tahon or Suzuki discloses the same article structure as recited in claims 1-8 and 37-44.

Tahon or Suzuki does not disclose the photoelectric device comprises a UV absorbing layer.

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However, adding a UV absorbing layer to the photoelectric device is known in the art.

Ikai teaches a photoelectric transfer device comprise a film composed of a UV absorbing compound such as titanium oxide, zinc oxide, cerium oxide and organic absorbers as well (Col. 31, lines 10-35).

Therefore, it would have been obvious to one of ordinary skill in the art to include a UV absorbing layer in order to absorb UV radiation, protect the device from UV radiation damage and prolong its operational life.

With respect to claims 23-25 and 57-59, Tahon or Suzuki does not specify that the substrate is made of metal web.

Ikai teaches that the substrates used for the device can be a transmitting substrate such as plastic film of polyimide, polyether-sulfone, polyethylene terephthalate etc., metallic structures having slit-like channels on the surface such as aluminum, iron, or glass substrate. Depend on the application, the substrates are also subject to surface treatment (Col. 26, lines 5-22).

Therefore, it would have been obvious to one of ordinary skill in the art to use the substrates as taught by Ikai including the metal web in order to obtain a transmitting substrate for the photoelectric device.

7. Claims 14-16, 27-29 and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tahon et al. in view of Suzuki et al.

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As stated above, Tahon discloses the same article structure as recited in claims 1-8, 12-13, 26 and 37-44.

Tahon does not specify that the barrier layer comprises titanium oxide or silicon nitride.

Suzuki teaches the inorganic barrier layer is made of metal oxide and metal nitride such as  $\text{Si}_3\text{N}_4$  and  $\text{TiN}$  (Col. 7, lines 15-25).

Suzuki also teaches these metal oxide and metal nitride exhibit low moisture permeability and are stable against moisture (Col. 7, lines 15-30).

Therefore, it would have been obvious to one of ordinary skill in the art to use the metal oxide and metal nitride including  $\text{Si}_3\text{N}_4$  and  $\text{TiN}$ , as taught by Suzuki, to make the barrier layer since these materials exhibit low moisture permeability and are stable against moisture and are excellent materials for the barrier layer in Tahon's device.

Although Suzuki does not specify the barrier layer comprises titanium oxide in the barrier layer, Suzuki teaches the barrier layer is made of metal oxide and metal nitride, the metal used including silicon and titanium.

Therefore, it would have been obvious to one of ordinary skill in the art to include titanium oxide as one of the metal oxides since titanium oxide, titanium nitride, silicon oxide and silicon nitride are similar inorganic metal oxides and metal nitrides products and they have similar properties, such as low moisture permeability. One skilled in the art would have been motivated to use these product as materials for barrier layer with the expectation that similar product would have similar properties and utilities.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 703-305-0395. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Ling X. Xu  
Examiner  
Art Unit 1775

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LX

March 21, 2003

  
DEBORAH JONES  
SUPERVISORY PATENT EXAMINER